IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	Schrader
Title:	SWITCHABLE LENS DISPLAY
Appl. No.:	10/524,985
Filing Date:	10/12/2005
Examiner:	Anthony Perry
Art Unit:	2879
Confirmation Number:	3263

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
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Dear Sir/Madam:

This Appeal Brief is being filed in response to the Final Office Action mailed May 28, 2010. August 28, 2010, is three months from the mailing of the Final Office Action. Accordingly, this Appeal Brief is timely filed with a credit card payment form in the amount of $540.00 covering the 37 C.F.R. 41.20(b)(2) appeal fee. If this fee is deemed to be insufficient, authorization is hereby given to charge any deficiency (or credit any balance) to the undersigned deposit account 19-0741. Appellant hereby respectfully requests reconsideration of the Application.

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REAL PARTY IN INTEREST

The real party in interest is Spyder Navigations L.L.C., the assignee of record, having a place of business at 1209 Orange Street, Wilmington, Delaware 19801 USA. The assignment to Spyder Navigations L.L.C. was recorded in the records of the United States Patent and Trademark Office at Reel/Frame 019833/0099 on September 17, 2007.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences that will directly affect, be directly affected by, or have a bearing on the present appeals, which are known to Appellant or Appellant's patent representative.

STATUS OF CLAIMS

Claims 26-33 and 35-41, which are attached hereto as an appendix, are currently pending in the application and stand rejected. Claims 26-33 and 35-41 are the subject of this appeal. Claims 1-25 and 34 were previously canceled. Claims 1-41, with the appropriate status references, are shown in the attached Claims Appendix.

STATUS OF AMENDMENTS

No amendments have been made to the present application in response to the Final Office Action.

SUMMARY OF CLAIMED SUBJECT MATTER

Two independent claims, Claims 26 and 33, are under appeal and are argued below as a group. Each of these claims is summarized below, with citations to corresponding portions of the specification and drawings as required by 37 C.F.R. § 41.37(c)(1)(v). These citations are provided to illustrate specific examples and embodiments of the recited claims language, and are not intended to limit the claims.

Independent Claims 26 and 33

Claim 26 is directed to a display device. The display device comprises a substrate layer, a pinhole mask, and an array of electrically controllable lenses. (*e.g.*, Figs. 1a and 1b, S, M and L; p. 3, l. 26 – p. 4, l. 5). The substrate layer comprises a substantially transparent material. (*e.g.,* p. 3, l. 26 – p. 4, l. 5). The pinhole mask comprises an array of pinholes, wherein each pinhole is associated with a pixel of the display device. (*e.g.,* p. 3, l. 26 – p. 4, l. 5). The lenses are positioned between the substrate layer and the pinhole mask to control the divergence of light received through the substrate and the lenses towards the pinhole mask. (*e.g.*, Figs. 1a and 1b, S, M and L; p. 3, l. 26 – p. 4, l. 5). The light is focused into a pinhole by a lens of the array of electrically controllable lenses to illuminate the associated pixel. (*e.g.,* p. 3, l. 26 – p. 4, l. 5; p. 4, ll. 9-14; p. 5, ll. 15-19). The light is transmitted unfocused by the lens to darken the associated pixel. (*e.g.,* p. 3, l. 26 – p. 4, l. 5; p. 4, ll. 9-14; p. 5, ll. 20-25).

Claim 33 is directed to a method of operating a display device. The method comprises determining whether to illuminate a pixel on the display device. (*e.g.,* p. 3, l. 26 – p. 4, l. 5). If the pixel is to be illuminated, a lens of the array of electrically controllable lenses focuses received light into a pinhole of an array of pinholes. (*e.g.,* p. 3, l. 26 – p. 4, l. 5; p. 4, ll. 9-14; p. 5, ll. 15-19). If the pixel is not to be illuminated, light is allowed to pass

through the lens unfocused, wherein unfocused light is substantially blocked by a pinhole mask. (*e.g.,* p. 3, l. 26 – p. 4, l. 5; p. 4, ll. 9-14; p. 5, ll. 20-25).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

One ground of rejection is presented for review in this appeal:

(1) Whether Claims 26-33 and 35-41 are anticipated by or obvious in view of U.S. Patent No. 6,603,444 (hereinafter "'Kawanami").

ARGUMENT

I. LEGAL STANDARDS UNDER 35 U.S.C. § 102

A prior art reference, as defined by 35 U.S.C. § 102, is said to "anticipate" a claimed invention if each and every element of the claimed invention is disclosed, either expressly or inherently, in the prior art reference. In re Spada, 911 F.2d 705, 708, 15 U.S.P.Q.2d 1655, 1657 (Fed. Cir. 1990). In deciding the issue of anticipation, one must identify the elements of the claims, determine their meaning in light of the specification and prosecution history, and identify corresponding elements disclosed in the allegedly anticipating reference. Lindemann Maschinenfabrik v. American Hoist & Derrick Co., 730 F.2d 1452, 1458, 221 U.S.P.Q. 481, 485-86 (Fed. Cir. 1984).

The Federal Circuit explained the requirements for anticipation in Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983), by stating:

> The law of anticipation does not require that the reference "teach" what the subject patent teaches. Assuming that a reference is properly "prior art," it is only necessary that the claims under attack, as construed by the court, "read on" something disclosed in the reference, i.e., all limitations of the claim are found in the reference, or "fully met" by it.
>
> ****
>
> Extrinsic evidence from those skilled in the art can be used to explain, but not to expand the meaning of a disclosed element in that single prior art reference, to determine whether the reference anticipates the claims at issue. In re Baxter Travenol Labs., 952 F.2d 388, 21 U.S.P.Q.2d 1281 (Fed. Cir. 1991).

Id. at 772, 218 U.S.P.Q. at 789.

II. LEGAL STANDARDS UNDER 35 U.S.C. § 103(a)

35 U.S.C. 103(a) states:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of

> this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Obviousness under 35 U.S.C. 103(a) involves four factual inquiries: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1 (1966).

In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art. *In re Piasecki*, 745 F.2d 1468, 1471-72 (Fed. Cir. 1984).

According to M.P.E.P. § 706.02(j),

> 35 U.S.C. 103 authorizes a rejection where, to meet the claim, it is necessary to modify a single reference or to combine it with one or more other references. After indicating that the rejection is under 35 U.S.C. 103, the examiner should set forth in the Office action:
>
> (A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,
>
> (B) the difference or differences in the claim over the applied reference(s),
>
> (C) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and
>
> (D) an explanation >as to< why >the claimed invention would have been obvious to< one of ordinary skill in the art at the time the invention was made**.
>
> ** "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

III. REJECTIONS OF CLAIMS UNDER 35 U.S.C. §§ 102(e) AND 103

On page 2 of the Final Office Action dated May 28, 2010, Claims 26, 39, 30, 33, 35, 36, and 51 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Kawanami. For the reasons given below, Appellant submits that the Examiner's rejection under 35 U.S.C. § 102(e) is improper and should be reversed.

On page 4 of the Final Office Action dated May 28, 2010, Claims 27, 28, 37 and 38 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Kawanami in view of U.S. Patent 5,731,909 ("Schachar"). On page 5 of the Final Office Action dated May 28, 2010, Claims 31 and 39 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Kawanami in view of U.S. Patent Publication No. 2001/0004279 ("Sako et al."). On page 6 of the Final Office Action dated May 28, 2010, Claims 32 and 40 are rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Kawanami in view of U.S. Patent 5,608,554 ("Do et al."). For the reasons given below, Appellant submits that the Examiner's rejections under 35 U.S.C. § 103 are improper and should be reversed.

The Examiner relies on Kawanami for the rejections under both 35 U.S.C. §§ 102(e) and 103. Appellant respectfully submits that Kawanami fails to disclose each and every element recited in independent Claims 26 and 33. The remaining pending claims ultimately depend upon either Claim 26 or Claim 33. Accordingly, Appellant respectfully submits that Kawanami fails to disclose each and every element recited in Claims 27-32 and 35-41.

1. Kawanami fails to disclose the claimed "array of electrically controllable lenses ... wherein the light is ... transmitted unfocused by the lens to darken the associated pixel."

Claim 26 recites in part "an array of electrically controllable lenses ... wherein the light is ... transmitted unfocused by the lens to darken the associated pixel." Claim 33 recites in part "allowing the received light to pass through the lens unfocused." On page 3

of the Final Office Action, the Examiner asserts that the abstract and Figures 1A and 1B of Kawanami teach the claimed element of "wherein the light is ... transmitted unfocused by the lens to darken the associated pixel." In responding to Appellant's previous arguments, on pages 7 and 8 of the Final Office Action, the Examiner states:

> Kawanami et al. show the light passing through the lenses unfocused with respect to the holes in the pinhole mast (for example, see Fig. 1A). Also, it is noted that Figure 1A of Kawanami et al. shows two adjacent light rays, on either side of the middle straight light ray, being parallel to each other after passing through the electronically controllable lenses, such that they do not converge (not focused). Furthermore, it is noted that page 5 of the written disclosure of the current application recites: "When the lenses L are switched off (Fig 1 b), the light will pass the substrate S together with the switchable lenses L substantially undisturbed, i.e. without significant change in divergence and fall unto the pin hole mask M. In this case most of the light will be blocked and only a small fraction of light passes through the pinhole mask M. Hence, the pinholes H can be observed as dark pixels." The Applicant seems to be arguing that the light is completely undisturbed when traveling through the electronically controllable lens. However, no teaching or explanation of how such a feature can be achieved has been found in the specification. Again, the claimed limitation, "unfocused", has been understood to mean that the light passing through the lens is unfocused with respect to the pinholes, and is allowed to hit the pinhole mask, which is consistent with the teachings of the written disclosure.

(Emphasis in original.)

Appellant respectfully disagrees with the Examiner's definition of "unfocused" and with the assertion that Kawanami teaches transmitting "unfocused" light. Kawanami is generally directed towards "a plurality of pixels ... each of the pixels is composed of ... a first liquid 106, [and] an electrolyte solution 107." (Col. 2, ll. 39-44.) In describing how light passes through the first liquid and the electrolyte solution, Kawanami provides:

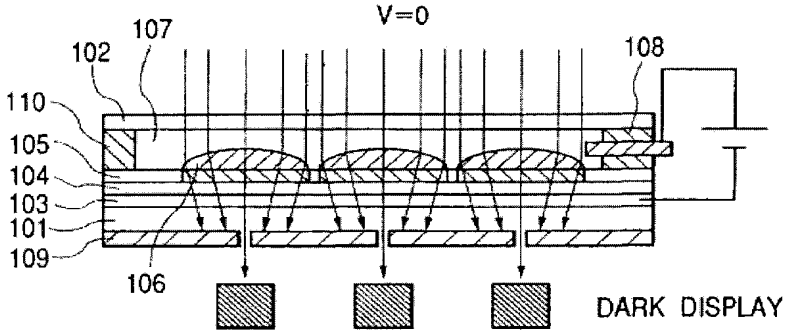
> The difference between the refractive indexes of the first liquid 106 and the electrolyte solution 107 is preferably not less than 0.05 and in the present embodiment the refractive index of the first liquid 106 is 1.49 while the refractive index of the electrolyte solution 107 is 1.34. Therefore, **the incident light**

> **is refracted at the interface between the first liquid 106 and the electrolyte solution 107**. **In the state of V=0 where no voltage is applied to the electrolyte solution 107**, i.e., where no voltage is applied to the electrolyte solution 107 between the active element array substrate 103 and the opposed electrode 108 of nickel (FIG. 1A), since the first liquid 106 has a small angle θo of contact against the substrate 101 with the active element array substrate 103, insulating layer 104, and surface treatment layer 105 formed thereon, **the light is *hardly converged*** and thus the most light is cut by the mask 109, whereby the display of each pixel is in an off state (dark display).

(Col. 3, lines 41-57, emphasis added.)

Thus, when a pixel is to be darkened, no voltage is applied and light is **hardly converged** as it passes through the first liquid and electrolyte solution. That is, light is converged to some degree on the hole in the mask. Figure 1A of Kawanami clearly shows this convergence and is reproduced in its entirety below:

FIG. 1A



As shown above in Figure 1A, light that passes through the first liquid 106 converges toward a hole in the mask 109. The light is clearly focused at some focal point, although that focal point exists somewhere beyond the mask 109. As the light that passes through the first liquid 106 and the electrolyte fluid 107, the light is focused. Appellant asserts that focusing light that passes through the first liquid at some focal point is different than the

claimed "an array of electrically controllable lenses ... **wherein the light is ... transmitted unfocused** by the lens to darken the associated pixel." (Emphasis added).

On pages 7 and 8 of the Final Office Action, the Examiner asserts that:

> Also, it is noted that Figure 1A of Kawanami et al. shows two adjacent light rays, on either side of the middle straight light ray, being parallel to each other after passing through the electronically controllable lenses, such that they do not converge (not focused).

Appellant respectfully submits that the Examiner is discussing the light rays that are actually focused and not unfocused as asserted. In Kawanami, the two parallel light rays on either side of the middle straight light ray are parallel to the middle straight light ray prior to passing through the first liquid 106. As the light travels through the first liquid 106, the light is focused onto some point. This is shown as two parallel light rays on either side of the middle straight light after passing through the first liquid are no longer parallel to the middle straight light ray. The two parallel light rays would converge with the middle straight light ray at some focal point if not for the mask 109. Accordingly, Appellant asserts that the light that passes through the first liquid has become focused, and therefore, cannot be considered to be unfocused light.

Appellant also asserts that the Abstract of Kawanami fails to disclose unfocused light. The abstract provides:

> A display element has a plurality of pixels and is constructed to display image information by modulating light passing through each pixel. The display element has the following for each of the pixels: a mask having a shield portion in part; and a first fluid and an electroconductive or polar, second fluid being immiscible with each other. An amount of light passing through the mask is regulated in such a way that a voltage applied to the second fluid of each pixel is varied to alter the shape of an interface between the first fluid and the second fluid, so as to increase or decrease light incident to the shield portion of the mask.

Thus the abstract discloses light incident to the shield portion of the mast. The abstract, however, is silent in regards to unfocused light. Accordingly, Appellant asserts that the abstract fails to teach the claimed "an array of electrically controllable lenses ... wherein the light is ... transmitted unfocused by the lens to darken the associated pixel."

2. The Examiner mischaracterizes the disclosure in Appellant's application by suggesting the disclosure infers the light passes with some disturbance.

On page 8 of the Final Office Action, the Examiner points to the present application as teaching that "light will pass the substrate S together with the switchable lenses L substantially undisturbed, i.e. without significant change in divergence." (Emphasis in original). Appellant asserts that the Examiner is mischaracterizing the disclosure of the present application by suggesting the disclosure's statement that light passes "substantially undisturbed" means that there is some disturbance. However, the disclosure does not indicate this. The change or disturbance in Kawanami can easily be seen in the Figures. In contrast, the present disclosure does not show any noticeable disturbance or change in divergence. As paragraph [0013] of the present application states, the disclosure provides that "When the lenses are switched off, the light will pass the substrate and the switchable lenses substantially undisturbed, i.e. **without change in divergence** and fall unto the pinhole mask." (Emphasis added). Further, light passing through the switchable lenses without change in divergence is clearly illustrated in at least figure 2b, which is reproduced below in its entirety.

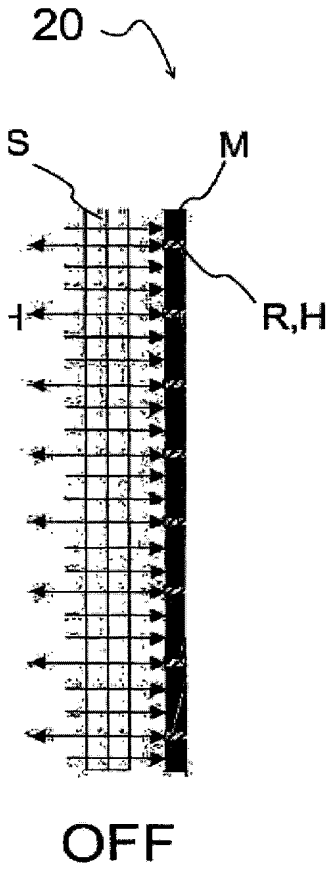


Fig. 2b

Paragraph [0042] of the present application, as published, discusses Figure 2b. The relevant portion of 2b provides:

> When the lenses L are not activated (Fig. 2b), most of the light becomes absorbed by the pinhole mask M. A reflective display 20 may be operated in the ambient natural or artificial light without necessarily requiring any light source arranged in the display device itself.

Thus, combining the above disclosure with Figure 2b shows that light passes through the lenses without a change in divergence. As clearly shown in Figure 2b, all of the illustrated light rays are parallel to one another both before and after traveling through the lenses. Accordingly, the light remains unfocused.

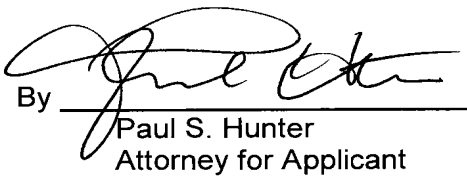
In addition, the current application provides that to improve display qualities of displays at the time of the invention, "the brightness and contrast together with the colour saturation of the displays must be further improved." (Present application as published, Para. [0003].) In addition, one advantage of the current invention is the "high contrast" of the display. As shown in Figure 1B of Kawanami, when a pixel is to be turned off, some amount of light is focused into the pinhole. This light increases the intensity of the pixel, and therefore, decreases the contrast of the device. This focused light is different from the claimed "an array of electrically controllable lenses ... wherein the light is ... transmitted unfocused by the lens to darken the associated pixel."

Appellant respectfully submits that light that passes through first liquid 106 of Kawanami becomes focused light as shown in Figure 1A of Kawanami. Appellants submit that the focused light of Kawanami is not the same as the claimed "an array of electrically controllable lenses ... wherein the light is ... transmitted unfocused by the lens to darken the associated pixel." Accordingly, for the above reasons, Appellant submits that Claims 26 and 33 and the remaining claims which ultimately depend upon either Claim 26 or 33 are not anticipated by Kawanami. Therefore, Appellant respectfully requests the Board reverse the rejection.

CONCLUSION

In view of the foregoing discussion and arguments, Appellant respectfully submits that Claims 26-33 and 35-41 are not properly rejected under 35 U.S.C. §§102(e) and 103 as being anticipated by or obvious in view of Kawanami. Accordingly, Appellant respectfully requests that the Board reverse all claim rejections.

Respectfully submitted,



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CLAIMS APPENDIX

1.–25. (Cancelled)

26. (Previously Presented) A display device comprising:

a substrate layer comprising substantially transparent material;

a pinhole mask comprising an array of pinholes, wherein each pinhole of the array of pinholes is associated with a pixel of the display device; and

an array of electrically controllable lenses positioned between the substrate layer and the pinhole mask to control the divergence of light received through the substrate and the lenses towards the pinhole mask, wherein the light is focused into a pinhole by a lens of the array of electrically controllable lenses to illuminate the associated pixel and is transmitted unfocused by the lens to darken the associated pixel.

27. (Previously Presented) The display device of claim 26, wherein the lens comprises an electrically deformable viscoelastic gel material.

28. (Previously Presented) The display device of claim 26, wherein the lens comprises a liquid crystal based switchable lens.

29. (Previously Presented) The display device of claim 26, wherein a brightness of the associated pixel is controlled using a focus value of the lens.

30. (Previously Presented) The display device of claim 26, wherein a brightness of the associated pixel is controlled through adjustment of an on-off duty cycle of the lens.

31. (Previously Presented) The display device of claim 26, wherein the pinhole comprises a reflective mirror configured to reflect light back in the direction of lens.

32. (Previously Presented) The display device of claim 26, wherein the light directed through the pinhole passes through a phosphor material.

33. (Previously Presented) A method of operating a display device, the method comprising:

determining whether to illuminate a pixel of the display device;

if it is determined to illuminate the pixel, controlling a lens of an array of electrically controllable lenses to focus received light into a pinhole of an array of pinholes; and

if it is determined not to illuminate the pixel, allowing the received light to pass through the lens unfocused wherein the unfocused light is substantially blocked by a pinhole mask including the array of pinholes.

34. (Canceled)

35. (Previously Presented) The method of claim 33, further comprising controlling a brightness of the pixel using a focus value of the lens.

36. (Previously Presented) The method of claim 33, further comprising controlling a brightness of the pixel by adjusting an on-off duty cycle of the lens.

37. (Previously Presented) The method of claim 33, wherein the lens comprises an electrically deformable viscoelastic gel material.

38. (Previously Presented) The method of claim 33, wherein the lens comprises a liquid crystal based switchable lens.

39. (Previously Presented) The method of claim 33, further comprising reflecting the received light back in the direction of lens using a reflective mirror positioned in the pinhole.

40. (Previously Presented) The method of claim 33, further comprising passing the light focused into the pinhole through a phosphor material.

41. (Previously Presented) The method of claim 33, further comprising receiving the received light in the display device at the array of electrically controllable lenses.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.